THE KALEIDOSCOPE;

OR,

LITERARY AND SCIENTIFIC MIRROR.

"UTILE DULCI."

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The Kaleidoscope.

DR. SPURZHEIM AND MR. LOCKE ON THE HUMAN MIND.—DOES THE STUDY OF PHRENOLOGY LEAD TO ATHEISM?

"All are but parts of one stupendous whole,
Whose body nature is, and God the soul."—POPE.

In consequence of the copious report of the opening lecture of this gentleman, which appeared in the last number of the *Kaleidoscope*, a correspondent has expressed the opinion that the learned Professor has fallen into an error in that part of the lecture where he says, "It was a maxim of some philosophers, and of Locke amongst the rest, that all men are born alike, and that the difference afterwards arising was solely to be attributed to education or the want of it."—Our correspondent is of opinion that this is a misrepresentation of the meaning of Locke, and he has appealed to us on the subject, not having himself immediate access to the celebrated Essay on the Human Understanding. He thinks, that although Locke maintains that the mind of every man is originally alike destitute of ideas, he does not deny that men have naturally or constitutionally different capacities for acquiring ideas and improving the mind.

As we have been appealed to on the occasion, we shall offer a few words in reply; and in order to prevent the possibility of misrepresentation, we shall previously transcribe a passage from chap. 1. of book 2, of Locke's immortal essay:—"Let us then suppose the mind to be as we say, *white paper*, void of all character, without any ideas;—how came it to be furnished?—Whence comes it by the vast store which the busy and boundless fancy of man has painted on it, with an almost endless variety? Whence has it all its materials of reason and knowledge? To this I answer in one word—from experience:—in that all our knowledge is founded, and from that it ultimately derives itself."

It appears clearly to us that Dr. Spurzheim is fully borne out by this passage in the inference that Locke considered the minds of all men capable of attaining equal perfection, if subjected to the same treatment, or placed under precisely the same external circumstances.—If this were Locke's opinion, as it appears to have been from his writings, it is an opinion from which we presume to dissent; for although we believe that the human mind is originally a *tabula rasa*, yet experience and analogy lead us to the conclusion that the physical organization of men differs so essentially, that if it were possible to bring up all the members of a numerous family precisely in the same manner, to bestow upon each the same care and attention in every respect, there would still be exhibited as much difference in their capacities as is found to exist in their lineaments, their voices, and all other external characteristics. This variety is, in our opinion, an essential attribute of our nature, impressed upon it by Providence for the wisest purposes; and to seek to impart to all men one uniform intellectual character would be as hopeless a task as to attempt to wash the Ethiopian white.

The designs of Providence are inscrutable, and it would, therefore, be the height of presumption to pretend to assign reasons for that infinite variety which we know to exist in the human mind and the human form. But we do clearly perceive some of the advantages which arise from this order of nature, when we consider what would be the result had it been otherwise ordained. If, for instance, the form, features, voice, and other externals of every man were precisely the same, the most inextricable confusion would necessarily result from such identity. Partial approximations to personal resemblances have been known to defeat the ends of justice; and if that uniformity of external appearance prevailed which we have supposed, for the sake of illustration, every criminal must escape with impunity, and all human testimony would become suspicious, if not utterly worthless. As analogous to the illustration we have adduced, we may advert to the endless variety which prevails in the hand-writing of different men. If a hundred boys be brought up under the same master, and if precisely the same pains be bestowed upon each, and the same copy be exhibited for imitation, there will not be two persons in the hundred between whose writing there shall not be a palpable and essential difference.

If it should be urged that we have diverged from the argument, by adducing physical rather than metaphysical illustration, our answer is, that we may be permitted to reason by analogy, when we cannot arrive at any rational conclusion by a more direct process. We are of opinion that there are no two things in nature precisely alike; that although there exists between two leaves of the same plant, for instance, a general resemblance, which enables the naturalist to distinguish the class, order, or variety to which they belong, yet no two of the leaves, when compared, bear an exact resemblance to each other.—It is usual to say, "as like as two peas;" and yet we have known a blind gentleman who could always, by the touch, distinguish a difference between any two which were subjected to his examination.

The inference we draw from these considerations is, that as no two objects which we can compare together are found to be alike, the same diversity prevails in the human mind; and that no education, discipline, or fortuitous combination of circumstances would ever have enabled the writer of this paragraph to become a Shakspeare.

One objection sometimes urged against the theory (or science, as its professors may regard it,) of phrenology, appears to us to be extremely ridiculous. It is said that it leads to the doctrine of materialism and scepticism. Whether this be or be not the tendency of this pursuit, is not so much the question with rational men, as whether it be true or false. If true, they would adopt it, persuaded that the knowledge of what is true can neither militate against human happiness, nor lead to atheism.*

* If there be a reasoning Atheist amongst our readers, we advise him to repair forthwith not to *hear*, but to *see*, a sermon at the lecture-room, in Bold-street, where, by means of a capital solar microscope, he will find a drop of water, not larger than the head of a small pin, magnified into an immense ocean, in which thousands of living beings are playing their gambols. If one of these animalculæ should cease to move for one moment, its heart may be distinctly seen to beat, and its blood to circulate. Thus may we, as Shakspeare truly says, find

"*Sermons in running brooks.*"

Elaborate and subtle discussions about matter and spirit have always appeared to us to be vain and useless. Of what possible consequence can it be to man to know whether the Almighty perform his operations by the agency of matter, or of what we call spirit or essence, of which we can form no idea, all our knowledge being deduced from experiment?

If the brain and the soul could be proved to be one and the same, how could such a discovery tend to diminish the admiration of man for that great unknown Cause who could endow matter with the faculty of reasoning, which assimilates it to the Deity himself? Whether the soul be essence or matter, it is equally above our conception, as we can produce neither the one nor the other; all that we can do is to modify the matter supplied to our hands; and a material body, and an immaterial essence, are phenomena alike above the grasp of our finite comprehension. There are effects produced in nature the existence of which are palpable to our senses, yet we cannot determine whether they result from the agency of matter, or of what we term essence or spirit. Such is the magnetic fluid, which conveys to our mind the idea of an immaterial quality, rather than a material fluid, as it possesses attributes which do not belong to matter. One magnet, without losing a particle of its power, will communicate to a thousand, or any number of other magnets, a power equal to its own; and thus, as Pope says, it "operates unspent."* This is a property totally unlike, and indeed opposite to that which belongs to matter; and the magnetic fluid, therefore, may serve to convey some faint idea of essence, in opposition to matter. But whether this fluid be tangible, material, and ponderable; or impalpable, immaterial, and imponderable, the phenomenon is equally a miracle to man, and equally indicative of Divine power. To say, therefore, that the doctrine of materialism leads to scepticism, appears to us to be as illogical as it is superlatively preposterous.

* There are some anomalous facts connected with the magnetic fluid, which countenance this opinion. If a magnet possesses an attractive power equal to sustain a bag of sand of exactly one pound weight, hung to its extremity, the weight may be gradually increased to a most surprising degree; and thus its virtue not only "operates unspent," but actually augments, by a process which it is natural to suppose would result in exhaustion.

Scientific Notices.

PHRENOLOGY.

DR. SPURZHEIM'S LECTURES.

LECTURE II.

Dr. Spurzheim commenced his second lecture, by stating that phrenologists considered the mind endowed with certain fundamental powers, each of which was manifested in this life by certain instruments or portions of the body. Another point to be borne in memory was, that they merely spoke of dispositions and capacities of the mind, and not of actions, a distinction not sufficiently attended to by many, even amongst phrenologists, who confounded the faculty or capacity with the use or abuse of it. They

could merely speak of innate dispositions. He had alluded to phrenology as a branch of physiology: now it was well known that physiologists never spoke of actions, but merely of powers and capacities. As a physiologist he knew that the feet were endowed with certain muscular powers; but by examining the feet he could not tell to what use the individual to whom they belonged had put them during the day, whether he had walked, danced, or run. In speaking of the digestive organs, he knew nothing as to their actions: he could not tell, by their examination, what an individual had taken for dinner; he merely knew that they had certain powers. He knew that an individual having eyes could see; but he could not pretend to tell, by examining them, at what such an individual had been looking. In speaking of bodily operations, they merely spoke of the powers, and it was the same in phrenology. They merely spoke of mental dispositions, and not actions, because it depended upon a variety of circumstances, whether dispositions were called into action or not. Actions were always contingent and uncertain; the powers always innate and positive. *(Applause.)* They had all seen a great many heads; had they ever found two alike? It was an ascertained fact that heads were always different in their formation, and that this difference existed from the very earliest age. In the same family, amongst brothers and sisters, no two heads could be found alike. This was a fact. The same difference existed in the dispositions of individuals, and hence arose the questions whether there was any connexion between the cerebral formation and the mental disposition, and whether any inference could be drawn from the external form of the head, as to the qualities of the brain contained in it. Many denied that any inference could be drawn from external differences with regard to the structure of the brain. From an examination of the different divisions of a number of heads, it appeared that there was as great a difference in parts as in totalities. In his opinion, this difference arose from a variety of causes, the determination of which would be very interesting and important. Some said that the form of the head and the size of the brain had no connexion with each other; others that the form of the skull depended on the muscles and other circumstances. This was one objection to the doctrines of phrenology, but if it could be proved, let it be so. Others said it was possible to give the head an arbitrary form, whilst others exclaimed, "Oh, these your bumps! I will give you a great blow, and a bump will be the consequence." *(Laughter.)* He wished the phrenologist had the power to form the brain just as he liked;—oh, what a fortune he would make! No one possessed the power to alter the formation of the brain as he thought proper, though it was very possible to change the form of the head, as was the practice among the Caribs, the North Americans, and other uncivilized tribes, who, by constant pressure and other means, gave the heads of their children a form suitable to their ideas of beauty. He recommended to future navigators to ascertain whether the nations who flattened their heads, thus prevented the development of the parts to which the depression was applied, or whether a corresponding enlargement did not take place elsewhere, and the brain shift its place accordingly. He then exhibited the skull of a Carib, the forehead of which was very much depressed, and the lateral parts were very much extended. It was, therefore, an interesting inquiry whether the brain merely shifted its place by pressure, or was acted on by it in some other manner. Whatever were the cause of arbitrary differences, the object to be ascertained in ordinary cases was whether there was any relation between the conformation of the skull and the cerebral parts, and then if there were any connexion between cerebral development and mental dispositions.

In the examination of the skull, the principal difficulty was to be met with from the skin, though this was not pressed by the opponents of the science, who laid more stress on the irregularities of the skull itself in its corresponding portions, and asked what confidence could be placed on external observations, when the tables of the skull were not parallel with each other. They said the skull was hard in the external surface, and hard also in the interior, but that both parts were harder than the intermediate layer, which was a softer, spungeous mass; and that the skull was not parallel in all its parts, and not always equally thick. This disparity was generally considered the greatest objection to phrenology. In some collections were to be found, skulls, the inequalities in the thicknesss and size of which were very great. The lecturer then exhibited a skull which was very thick in one part, and very thin in the corresponding one. It would readily be believed that, in examining so many skulls, Dr. Gall and himself had witnessed many instances of this disproportion; and that they had also met with some of astonishing thickness, when compared with others. In exhibiting a skull, which was exactly 1½ inches thick, he said this was an extraordinary case—a disease; and asked medical men, whether, in studying physiology, they began with diseases; whether, if they wished to exhibit the muscular powers, they began with such as were paralyzed, and could not move; if, in explaining the functions of the stomach, they began with one that could not digest? They would not pursue such a course, and yet in selecting such facts, in opposition to him, respecting the skull, they gave him diseases, and not healthy subjects. *(Applause.)*

In examining the heads of new-born children, it was necessary to begin with the texture of the skin around the skull, because this was very thick in some individuals, and very thin in others. This was the first great difficulty to be encountered, in ascertaining the proportions of the brain. He advised those who thought phrenology might be learned without difficulty, to give it up, and said that in this respect, it was only like other arts, none of which could be acquired without difficulty. He would endeavour to remove this, and in points which he could not explain he would confess his ignorance. From the moment children came into the world, the heads of all were different from each other both in size and conformation. The skull of a new-born infant was extremely thin, but it became gradually thicker as the age of the child and the size of the skull increased. The difference between it and the skull of a child seven years old, was very great in this respect; and also in the size of all the different organs. He conceived that the external difference in the heads of individuals corresponded with those within in the shape, size, and qualities of the brain. There were some superficial pamphleteers and others equally ignorant of the brain, who maintained that at the age of seven years it had attained its full growth. This was a gross mistake, and he accounted for it in this way. Certain children died young, and their skulls were preserved; the skulls of adults were also collected, and it was found that, in some instances, the skull of a child seven years old was as large as that of an adult. This was their fact—where was the inference? *(Applause.)* He had seen children with larger heads than those of many inveterate enemies of phrenology. *(Laughter.)* He then exhibited the skulls of individuals of different ages, and said that the thickness of the skull did not increase in the same proportion as its size. The question then arose whether any inference could be drawn from the external form of the head as to the size and proportions of the brain. He might hesitate to say that one man had more brain than another; but if he found certain parts more developed than others, he could have no hesitation in forming a judgment accordingly, and saying that certain lobes and organs were larger than others, at all events, if they did not contain more brain. Let but one fact to the contrary be adduced, and he would give up phrenology. The external configuration of the head corresponded with that within, and indicated accordingly, whether the mass of brain was larger or smaller in different compartments. In examining the heads of individuals he could speak confidently of this until he came to those about 60 years of age, when he became cautious, and could not be so certain, because he knew that the energy of the mental dispositions often ceased to operate about that period. Some began to complain even sooner—that they could not learn with the same facility as formerly; others did not feel it so much; and others, more fortunate, still preserved their mental powers, in full activity, till seventy years of age, and upwards. But the latter was not a common case; the vital powers became depressed by the advances of age, and very few old people liked to exert either their mental or bodily powers; they were fonder of quiet and repose. But this was not the only change in them; in their own youth they were fond of jumping, dancing, and general activity of body and mind, but when they became old themselves, they complained of the restlessness of the young. They were also accustomed to complain in their youth that their fathers, by their obstinacy and prejudices, prevented the spread of science and the advancement of knowledge, and yet when they became old themselves, they followed exactly their fathers' steps. It was thus very fortunate for the increase of human knowledge and the advance of new sciences, that men were not permanent beings, but gradually made way for others less prejudiced than themselves. From these considerations he became careful of judging of the interior of the head, by its external appearances above a certain age. Age caused changes as great in the head as in any other part of the body. The skull generally became thicker by age, and in proportion to this increase of thickness, the brain was depressed and diminished, though the external form of the head might remain the same. He then exhibited several skulls of old persons, in order to show their increased thickness, but said, that though this was the general rule, it did not always follow that because persons were old, they must necessarily have thick skulls. He also exhibited the skulls of idiotic and insane persons, which were possessed of a remarkable degree of thickness, one of them being not less than one inch and a half thick. The doctrine of craniology, or the study of the skull, he said, must be considered in the pursuit of phrenological knowledge, and it became a question whether, when the skull underwent certain changes, corresponding changes did not take place in the internal conformation and the brain itself. To prove that there was such connexion, he referred to nature, and said that the fact would be demonstrated by the examination of the skulls and brains of individuals at different ages. He then alluded to the opinion that the mind is endowed with different powers, and said that some persons had spoken of Dr. Gall as if he had had any pretensions to the idea, that the mind possessed a plurality of powers, whereas, all who had reflected on the nature of the mind had spoken of such plurality. None were satisfied with giving but one power to the mind, without any division whatever. Physiologists gave different locations to the different senses and faculties, as, for instance, the head to the intellect, and the heart to the feelings. Some philosophers had spoken of the understanding and the memory; others of the imagination, judgment, common sense, and other powers of the mind. This division of the mind was a very ancient doctrine. He asked if there was any one equally fit for all things? Did they know any person who was, at the same time, a great musician, a great poet, a great mathematician, and equally eminent in all the arts and sciences? Was there any individual possessing the qualifications for every species of employment,—that of a painter, or that of a general, or a legislator, in an equal degree? Hence it was evident that there must be a great difference in the minds of men. He referred them to the diseases to which the mind was subject; and said, that in lunatic asylums, it would be found amongst the insane that individuals, whose minds were disordered on some points, were sound in others. They would, perhaps, find there an individual who fancied himself to be an Emperor; if they spoke to such a one on other subjects, they might, probably, find that he spoke sensibly enough, and could even commiserate the condition of his unfortunate companions; but if they once touched upon the chord, they would find his majesty as mad as the rest. Hence it was

evident that certain parts of the mind might be in a healthy state, whilst others were diseased and disorganized, and this was sufficient to prove the plurality of the faculties of the mind.

In speaking of the size of the brain, or the parts more or less developed, it was important to have a true idea of the meaning of the word size, which was not confined to elongation and elevation alone. Some persons had a strong tendency to look only at what were termed bumps on the head, but he advised his audience to attend to something more than these, or they would never make a step further than bumpists, and could never become phrenologists. The brain was an aggregation of parts, and could only be judged of by the whole. There were nerves spreading all over the head, from the interior towards the surface, in all directions. It was found that these were of different dimensions, and some portions being more developed than the neighbouring parts, or elevated above them, formed what were termed bumps on the skull, which corresponded with the formation of the brain within. Many persons had no elevations whatever on their heads, being without any protuberances, and quite smooth; and yet would any one say that such persons were, therefore, without the organs? Phrenologists attended to the size and conformation of the head generally, and did not confine their researches to particular protuberances. There were three lobes of the brain, which were easily distinguishable even by persons not conversant with anatomy. He wished, for instance, to know the formation of the posterior lobe of the brain; he examined how the whole part of the head was developed; this was the region behind the ear, and by ascertaining the shape of the head, in this direction, he had at once the elevation of the posterior lobe. But he must not merely consider the elevation of the part, but must, at the same time, take lateral dimensions or breadth into consideration, just as in judging of the strength of a muscle it would not do to examine merely its length and thickness without taking any notice of its breadth. If he found this cerebral part thick, and the rest healthy, he expected more energy and activity from breadth than from a deficiency in this respect. It was important in the study of mental dispositions to take advantage of the observations made with regard to the muscular powers, there being the same diversity between them. Some children were more active than others; they jumped about the whole day, and were never at rest, and yet they could not lift a heavy weight or perform any exercise requiring great strength of muscle;—again,—there were others more sluggish and more easily fatigued, but, at the same time, endowed with greater strength of muscle, and capable of lifting heavy weights or undergoing other vigorous exertion. The same diversity was to be observed with regard to the mind. Some individuals could compose music the whole day long, without possessing any strength or vigour of intellect; others continually exerted their reasoning faculties, and were frequently occupied in profound thought; and so on throughout the mental as well as the physical world there was this diversity of activity and energy.—Could the actions of both be attributable to the same causes; or was it not rather to be supposed that the actions of the mind differed, for a reason similar to that which accounted for the different actions of the body, the qualities of its organs? In the examination of the head attention must be paid not only to the elongation of each portion, but also to its dimensions in every direction. By pursuing this course throughout, nature and experience had proved that an estimate might be made of the dispositions of the mind, which was not to be arrived at by other means. Let them go to the philosophers and inquire respecting the nature and powers of the mind; philosophers had reflected on the subject for nearly seven thousand years, and what had they made out? They had assigned the mind general powers, and spoken of it in general terms, and, he asked, could this species of general knowledge be deemed satisfactory? *(Applause.)* It was an axiom of Locke that the more general an idea was the more vague it was, and that a clear idea could never be vague and general. Were the professors and students of natural history satisfied with general knowledge and general terms? Were he, for instance, to tell a naturalist that he had a created thing in his pocket, would that be deemed satisfactory information? Were he to say that it was an organized being—an animal,—he had in his pocket,—would that satisfy the naturalist? No:—and why? Because there were very many species of animals, and such a description conveyed no definite or intelligible idea. If he said it was a bird,—would that be enough for the naturalist? And if he said it was a finch, the inquirer knew that there were several finches, and would wish to know the particular species of the animal spoken of; he would require an accurate specification in all respects. All our ideas of natural knowledge were specified,—but how different was it with what we knew of the nature and operations of the mind. How were the actions of animals, so various and contrary to each other, explained? By one general term,—instinct. Why did migratory birds leave one country for another at certain periodical seasons? From instinct. Why did certain animals lay up provisions for the winter in the midst of the abundance of summer and autumn? From instinct. Why did the hen sit patiently to hatch her eggs; why did the duck run to the water; and why did the hen cry out to the ducklings she had hatched not to venture into the water? From instinct,—instinct—instinct. How, then, was it that so many different effects could be ascribed to one cause? Was it to be supposed that the impulse causing so many, and such different actions, was one and the same? In other sciences philosophers would admit nothing in general terms;—all must be clearly specified. Physiologists had had recourse to general terms, and in attempting to fix the seats of the memory, judgment, and imagination, they had not succeeded, simply because these names were general terms, combining a diversity of qualities. The mind thus became, in their idea, a species of instinct. If the physiologists were spoken to of bodily sensations and operations, they would immediately assign these to their proper causes, or, at least, point out the particular instruments by which they were effected. Phrenology had pretensions to greater accuracy. It was a new philosophy, not depending on, or restricted by, the notions of the schools, but founded on facts and observation. Dr. Gall, in the beginning of his researches, was guided by the maxims of the schools, and the consequence was, that after ten years of study, he was no farther advanced than at first. This was disheartening, but he did not, therefore, discontinue his researches; no, his powers pushed him on, and he persevered, but resolved to study nature and have recourse to observation. In common life it was customary to hear the phrase, that such an individual was born a musician, born a mathematician, or born a poet, (and poets, they were told, were all born and none made.) In studying children, it was found that some were born with strong feelings,—some were cautious and timid,—others bold and reckless; some were benevolent, and others the reverse; and, in fine, that an endless diversity of character prevailed even from the earliest age. Dr. Gall compared different talents and different dispositions with each other; from that comparison arose phrenology. He had recourse to nature; he compared the character of individuals with their organization, and found that different talents and different dispositions were attended also with a difference of configuration. Dr. Gall committed some errors, but they were such as were excusable under all considerations. One mistake made by him was the naming of certain parts of the head, sometimes according to the abuse of the faculties or dispositions of which they were the organs. Thus in his examination of thieves, he found that some individuals were continually returning to prison, notwithstanding all the punishment to which they were subjected; and the gaoler told him, that these fellows would still return, until, at last, they came to the gallows. Dr. Gall finding a certain part of the cerebral organization strongly developed in all these men, named that part, at once, the organ of theft,—though theft was only an abuse of the mental disposition manifested by it. Phrenology, however, was still in its infancy. When he was shown an individual who was an inveterate thief, he invariably found certain parts of the head very fully developed. The only error of Dr. Gall was in naming such organs, according to actions, or the abuse of the faculties signified by them. In individuals of peculiar dispositions certain organs were always found very large, but a partial examination was not sufficient to determine the character of the whole, as that depended on a combination of powers and faculties, and was dependant on a variety of external influences. It was best to adopt the mode pursued in physiology, and speak merely of the powers themselves, without any reference to their application. If he spoke, for instance, of the power of seeing, he did not name that power according to the object seen, whether it were black or white, or whatever it was, and in the same way the faculty of hearing was not named according to the thing heard. Phrenologists, therefore, examined the fundamental parts of the mind, without any reference to their application, and endeavoured to give them names according to their powers, and not according to the actions which might be the result of them. He referred to nature, facts, and observation, for a decision on the merits of phrenology, and said that no man was calculated to decide on the question, who had not had recourse to them. Individuals might be very well versed in every other species of knowledge, but, even if they were ignorant of nothing else, if they had not studied the brain, and attended to the lessons of observation and experience, they were incapable of giving an opinion on the doctrines of phrenology. Let therefore such individuals collect facts, and in proportion to the collection of such evidence they would become convinced. The place of the heart was exactly pointed out—it was not necessary now to open the body in order to determine it; but the discovery of its position, like all others in natural science, was made by observations on individuals. Those who were prepossessed against phrenology, in the beginning of their experiments on individuals of the same character, might say that the constant recurrence of the same results was nothing more than a singular coincidence; but if they persevered they would find that there was more in it than mere coincidence. Phrenology was yet in its infancy, though Dr. Gall had spent fifty years in his researches, and he himself had studied it for twenty-nine years. It would not be necessary for all to go through this, for the way was in some degree cleared. He only referred them to nature. An individual who had never heard or read of the operation of the tides, on seeing, for the first time, the water flowing in and retiring, would call it a very singular event; but if he continued his observations, he would find that the tide always came and retired, and would at length ascertain that its motions were regular, and might be calculated with certainty;—it was the same with phrenology. If he were told that an individual could see, he was certain that that individual had eyes; and if he were told that an individual had certain faculties, he was quite sure that that individual had the requisite organs.

One individual was more trusted than another;—see whether the sneaking, cunning fellow had the same sort of brain as the man known for his openness and candour; whether the religious and the irreligious man possessed the same conformation of head. Let the sexes, so different in their feelings and habits, be examined, and it would be found that there was the same difference in the formation of their heads. It would be in vain to attempt to remove this difference by education,—men did not, and never could, feel, think, and act like women. If they went to nations, they would find that there was a national character, and that this depended, in a great degree, on the formation of the head and brain. This distinction ought to be taken into account by political economists; the same laws would not do for all nations. Missionaries who went to preach the gospel in foreign countries did not attend sufficiently to this circumstance, but taught savages in the same mode to which they had recourse in the instruction of Englishmen, forgetful of the advice to "become all things to all men." *(Applause.)* It was of the highest importance to take this difference of national character into consideration. In commenting on the paucity of information possessed on this subject, he said it was lamentable that more attention should be paid by travellers to the colour of the skin, than to the characters, habits, and manners of the people of foreign countries. He thought it would scarcely be denied that the study of man was, at least, as deserving of being attended to as that of irrational animals and inanimate objects. There surely was something in certain nations always possessing the same character, and the people of every country having a character of their own. The characters of the English, Scotch, and Irish, were perfectly distinct, and never confounded with each other. If an English or Scotch boy were educated in France, he might be something different in his manners, but in his mode of thinking and feeling he would not become a Frenchman, but retain the character of the nation to which he belonged. Certain nations possessed more capacity, or were endowed with stronger feelings or passions than others. National character had, in some degree, been made the subject of study, but with respect to national heads, but little had been done, and yet the difference between them was striking. Many had made collections of the skulls of people of different parts of the world, but the knowledge thus obtained was yet very vague and imperfect. What a difference was there in the heads of the Scotch and Irish, nay, even between those of the highlanders and lowlanders of Scotland; and if the heads of Tartars, Chinese, negroes, Americans, and other tribes and people were compared together, how great were the distinctions between them! Dr. Spurzheim concluded by exhorting future travellers and voyagers to turn their attention to this subject, and examine and collect heads in the different parts of the world visited by them, in order to add to the store of phrenological knowledge.

(To be continued.)

Poetry.

MAY.

May, joyous, blooming, sportive May!
Why from thy broidered meads,
Thy woods, and lawns, and valleys gay,
And banks of clust'ring reeds;
Why still will fly
Hygeia, why?
Hygeia, dearest of the sylvan train!

Why flies the nymph? and in her stead,
'Mong budding foliage gay,
Why steals Consumption, silent maid,
To bear the rose away?
The sunny morn
To gaze upon,
Then hurry, shivering, to the dismal tomb!

Methought thine office, gladsome May,
Had been, with genial hand,
To rend the noxious weed away,
And, ah! with soft command,
Bid re-appear,
Whatever fair,
Or bright and blooming, own'd this lower sphere?

But now, alas! too plain I see
Thy witchery assumed;
And all fond Hope had told of thee,
A legend false; illumed
With stars, and flowers,
And sunlit bowers,
And shapes of loveliness surpassing thought!

And ah, despite thy cheek of rose,
And gracefulness of mien,
I see thee for the grave compose,
With stoic eye serene,
Earth's brightest, best!—
And on the breast
Scatter blue violets, and the lily pale!

May, winning May! more cruel thou
Than Winter in his might;
For still around thy beaming brow
Twines Hope's own garland bright;
While Winter tells
Of funeral knells,
And shows the mighty victor hov'ring near!

Liverpool. G.

EPITAPH
IN MICKLEHURST CHURCH-YARD.

Life is an Inn, where all men bait,
The waiter, Time—the landlord Fate;
Death is the score, by all men due,
I've paid my shot—and so must you.

METEOROLOGICAL DIARY.

(From the Liverpool Courier.)

Barometer at noon.		Extreme during Night.		Thermometer 8 morning		Extreme during Day		State of the Wind at noon.	Remarks at noon.
May									
13	29	74	48	0	57	0	66	0	S.S.E.	Fair.
14	29	74	57	0	61	0	65	0	W.N.W.	Sultry.
15	29	82	52	0	57	0	63	0	W.N.W.	Fair.
16	29	81	51	0	56	0	63	0	N.N.W.	Fair.
17	29	83	52	0	57	0	64	0	N.N.W.	Fair.
18	29	81	49	0	59	0	66	0	W.	Sultry.
19	29	75	50	0	60	0	69	0	S.S.E.	Fair.

CELESTIAL PHENOMENA.—PLANET MERCURY.

An opportunity will be presented, during the ensuing three weeks, of observing the planet Mercury, such as has not occurred for many years back, hardly in the time of any now living. This planet, of which all have heard, and few have seen, is now visible in the north-western horizon shortly after sun-set, and will become more bright each succeeding evening until the 4th of next month, when it will be above the horizon for nearly two hours after the setting of the sun. It will attain its greatest elongation from the sun on the 9th of June, but will apparently preserve a direct motion until the 22d of June, when it will begin to retrograde: this is owing to the combined effect of the motion of the earth in the ecliptic, and that of Mercury in its orbit. The planet is now, as seen from the earth, situated in the 73° of celestial longitude, and 1° 53′ of northern latitude, having 24° 22′ of north declination. Its place may be seen on the celestial globes about a degree east of the middle of the forelock in the head of the constellation Taurus. It will appear to travel eastward for three weeks to come, in a line skirting the north of the ecliptic, passing between the horns of the Bull, and on the 4th of June passing by and nearly eclipsing the star ζ in the knee of Castor, and finally stopping on the 22d of June at the star χ in the shoulder of Pollux, from whence it will retrograde.—On the 7th of June it will not set before half-past ten at night, when, if the weather be fine, its appearance, directly below the stars Castor and Pollux, will be very conspicuous. At present it shines with a very faint white light, and requires a favourable situation and careful observation, with a clear sky, to be discerned by the naked eye.

Liverpool, May 20, 1829.

EAST INDIA MONOPOLY.

The Editor of the *New York Morning Herald*, in copying (without acknowledgment,) from our journal a portion of our report of Mr. Buckingham's Lectures, the second edition of which is advertised in another column, says,—"We have devoted much space in our paper to-day to Mr. Buckingham's Liverpool Lectures upon the East India Company Monopoly. They will be found interesting to any class of readers. The geographical, historical, and statistical information conveyed in them, is highly curious and valuable, and much of it previously unknown to the public of England and of this country. Like the operation upon our citizens of the exclusive privileges granted to our auctioneers, those conferred upon the East India Company have done an immense injury to the people of England and to regular trade; and a great effort, long and unaccountably delayed, is now making to throw off a most galling yoke. The whole article we commend to the notice of the reader."

Liverpool Floating Bath.—In consequence of numerous personal inquiries on the subject, we take this opportunity of stating that there are at least THREE Floating Baths (such as they are) moored in the Thames, and in the most crowded part of the river, too. Like all stationary vessels, they must necessarily be sometimes in the way of the navigation; but we never heard that it was in contemplation to remove them. As places of public accommodation, compared with our Floating Bath, they are truly contemptible, as there is not room in any of them for a swimmer to take above three or four strokes. The admission, including boatage, is almost twice as much as is charged in our unrivalled Bath, which has, for the last twelve years, contributed more than any other establishment to the enjoyment and health of our townsmen; and has been the means of bringing many strangers to the town, who, but for this favourite lounge, would have gone to Southport, Parkgate, and other places. We shall only further state, as an additional claim of the spirited proprietor to the public patronage, that his Bath has hitherto made him a very inadequate return for the capital expended upon it, and the trouble with which the management is attended.

Roslin Chapel.—An accidental delay will prevent the closing of the Diorama until Saturday next, instead of its taking place on Saturday last, as was lately announced. This is fortunate for those who have hitherto neglected the opportunity of seeing it, and who are yet desirous of doing so. It is a charming representation of one of the *greatest* (though smallest) architectural beauties in this island. We have trodden the sacred floors of the original, and though we therefore speak warmly, yet we speak truly.—*See adv.*

The Traveller.

(Continued from our last.)

A TRIP TO BANGOR, THE CHAIN BRIDGE, BEAUMARIS, &c. MAY, 1829.

(Written for the Kaleidoscope.)

To describe the Bay of Beaumaris, in terms which would do justice to its grandeur and beauty, would be no easy task. At the entrance it is several miles broad, and very gradually becomes narrower to the view, till, in the distance, it seems to terminate in a point; but that is the point where the Straits of Menai are crossed by the wonder of the age, the Chain Bridge. As before observed, Penmaenmawr appears to form the left termination of the bay, although Penmaenbach (the lesser of the two mountains) might claim that distinction, being nearer to the mouth of the Conway, were it not eclipsed by the bulk and vicinity of its gigantic namesake, which is 1550 feet high, and terminates the range of mountains of the family of Snowdon, many of whose summits appear in lofty, yet reposing sublimity, far to the left, and far in advance, along the south-eastern side, but inland, of the bay, on whose lovely margin the village of Aber and Port Penrhyn are easily discernible. On the rising grounds near the latter, the newly-rebuilt towers of Penrhyn Castle, and the spacious front of the Penrhyn Arms Inn, are conspicuous objects. In a deep valley, a little further along the bay, stands the city of Bangor, distinguished by the broad and square tower of its cathedral. On the right of the view the towers of Beaumaris, and the splendid estate called Baron Hill, give dignity and interest to the Isle of Anglesey; but a little nearer to us, on the same side, is Priestholme, or Puffin's Island, before mentioned, the former name arising from its having been the occasional retreat of the friars of Penmon, and the residence of the hermit Seiriol; and the latter name being given it on account of its being the resort of immense flights of puffins: the *Alca Artica*.

Such a prospect as that before us could not fail to engage, for a time, the fixed attention of all our party, many of whom felt astonishment at finding such scenery within six hours' sail of Liverpool, and marvelled no little that they had neglected, until now, the opportunity of beholding it. As we passed Puffin's Island, on which there is a telegraph, it occurred to Mr. Daney, that he would transmit a message to a friend at Holyhead. This was accordingly done by our signal-master, the signals being properly displayed and answered, one by one, by the keeper of the station on the island. At this time our musicians resumed their cheerful and cheering office; quadrilles were recommenced, and continued all the time we passed Beaumaris, (where the vessel stopped only a few moments) and until we began to obtain a good view of the unrivalled bridge, which then riveted all thoughts and all eyes. We cast anchor near the right bank of the Straits, opposite to the ferry-house, which is an excellent inn, on the left bank, and near which a coach was waiting, ready to start for Carnarvon. It was now about six o'clock.

Having landed by means of boats, upon the Anglesey side, we proceeded to the Bridge, the visiting of which is a new era in the lives of those who have not before had that pleasure, and is a renewed luxury to those who have seen it again and again. The writer of this hasty sketch has, on a former occasion, attempted to describe this magnificent monument of art, between the chains of which he walked upon a plank, across the Straits, before the road was laid. For variety's sake, therefore, he prefers, at present, taking a description from another source, namely, from the "Cambrian Tourist." Whittaker. London.

"When on entering the Straits," says a recent author, "the bridge is first seen, suspended as it were in mid air, and confining the view of the fertile and richly wooded shores, it seems more like a light ornament than a massy bridge, and shows little of the strength and solidity which it really possesses. But as we approached it nearer, whilst it still retained its light and elegant appearance, the

stupendous size and immensity of the work struck us with awe; and when we saw that a brig, with every stick standing, had just passed under it,—that a coach going over appeared not larger than a child's toy, and that foot-passengers upon it looked like pigmies, the vastness of its proportions was by contrast fully apparent." The whole surface of the bridge is in length 1000 feet, of which the part immediately dependent upon the chains is 590 feet, the remaining distance being supported by seven arches, four on one side and three on the other, which fill up the distance from the main piers to the shore. These main piers rise above the level of the road 50 feet, and through them, two archways, each 12 feet wide, admit a passage. Over the top of these piers, four rows of chains, the extremities of which are firmly secured in the rocks at each end of the bridge, are thrown; two of them nearly in the centre, about four feet apart, and one at each side. The floor of the road is formed of logs of wood, well covered with pitch, and then strewn over with granite broken very small, forming a solid body by its adhesion to the pitch impervious to the wet. A light lattice work of wrought iron to the height of about six feet, prevents the possibility of accidents by falling over, and allows a clear view of the scenery on both sides, which can be seen to great advantage from this height. Having expressed our admiration of the skill evident in the construction, at once so simple and so useful, and having satisfied our curiosity on the top, we descended by a precipitous path to the level of the water, and gazed upwards with wonder, at the immense flat surface above us, and its connecting gigantic arches. The road is 100 feet above high water, and the arches spring at the height of 60 feet from abutments of solid masonry, with a span of 52 feet. These abutments taper gradually from their base to where the arch commences, and immense masses as they are, show no appearance of heaviness; indeed, taking the whole of the Menai Bridge together, a more perfect union of beauty with utility cannot be conceived. It has been erected to bear a weight upon the chains of 2000 tons; the whole weight at present imposed is only 500, leaving an available strength of 1500 tons; so that there is an easy remedy for a complaint which has been made of its too great vibration in a gale of wind, by laying additional weight upon it. The granite of which the piers and arches are built, is a species of marble, admitting a very high polish; of this the peasantry in the neighbourhood avail themselves, and every one has some specimen of polished marble ready to offer the tourist. There is so much magnificence, beauty, and elegance, in this grand work of art, that it harmonizes and accords perfectly with the natural scenery around, and though itself an object of admiration, still in connexion it heightens the effect of the general view.

How different this structure from the one contemplated to be erected when a meeting of the nobility and gentry of Wales was held in London, on the 29th of April, 1785, and when it was

"*Resolved*,—That the erecting a carriage bridge over the Streights of Menai will be of great public utility; and *resolved* also

"That it appears from the reports and concurrent opinions of several able engineers, that the erecting a timber bridge upon piles, with three swivel bridges, will not be detrimental to the navigation of the said Streights, and therefore we approve of a bridge being erected upon that plan."

Fortunately, the application to Parliament at that time failed, owing to some disunion among the applicants, who, however, could not be otherwise than desirous that *some* kind of bridge should be constructed rather than the inconvenient and often dangerous passage of the ferry should continue practicable only in open boats. But, to resume our narrative.

Our party walked over the bridge slowly, because there was something to be admired at every step:—the effect of a passing carriage; the vibration caused even by a hand applied to the suspending rods; the depth to the level of the water; the fine view of the Straits in both directions; the pillar in honour of Lord Anglesey, at Plâs Newydd; the diminutive appearance of persons on the shore; the excellence and strength of the workmanship; the beauty of the arches over the road through the suspension piers, and the echo in them,—all conspired to delight and to detain us. Many of our party then availed themselves of coaches and cars, which were waiting, and proceeded to Bangor; others chose to walk thither; and some went down the steep bank, to the foot of the bridge, from which point, certainly, the best view is to be had of the whole structure, inasmuch as by being in contact, as it were, with its proportions on *terra firma*, a better idea can be formed of its real, and, indeed, wonderful dimensions. We actually lingered about the spot, careless of time, or of aught but the scene we were contemplating; and yet, by the aid of a good driver, we soon overtook our companions. We proceeded over the hill to Bangor, along as fine a road as can be desired, and enjoyed the glorious prospect it commands over one of the loveliest of landscapes. Passing through Bangor we reached the Penrhyn Arms Hotel, a large, well-situated, and well-managed inn, on the rising ground between Port Penrhyn and the town; and there, after making a hasty toilette, the whole happy family of thirty-five re-assembled, in a large well-furnished parlour, and sat down to tea, under the agreeable auspices of our amiable hostess, when all enjoyed the pleasurable commencement of a merry evening.

So large a party of respectable ladies and gentlemen, enjoying the exhilarating, but not inebriating repast, was a scene worthy of being looked at; and that the evening was a merry one will be remembered by all present for years to come. Upon the lawn, in front of the windows, our musical band took their station, and performed many of their most pleasing airs. A promenade in the garden was next enjoyed; the declining day, twilight mingled with moonlight, shedding new beauties over the varied banks and shining waters of the extensive bay reposing below our feet. That the bay was once a fine agricultural valley, there are many reasons for supposing, as, besides the commonly received tradition on the subject, an ancient Welsh manuscript, at the rectory of St. George's, near Denbigh, alludes to a road passing straight across the bay, lower than Beaumaris. It says,—

"In the year 813, the castle of Treganwy was burnt by lightning; and in the year 823, it was rebuilt. It was afterwards reduced by the Saxons, and destroyed. This castle stood within the present flood-mark, opposite to Penmaen bach; and the road from Rhyddlan castle passed through it, by the boundary stone, near those two rocks called the Brown Brothers. These rocks make a part of the promontory of Llandidno, and stood opposite to the castle of Treganwy. Hence the road ran in a straight line to the palace of Elis Clynog, which lay about a mile from Priestholme Island. This palace once commanded a very beautiful vale, now totally flooded, and known by the name of Lavan sands. For about the time that the castle of Treganwy was destroyed by the Saxons, the sea broke in upon this country, and overflowed all the lands of the vale, which became a sand beach, and took the name of Lavan, or lamentation, from the melancholy cries of its suffering inhabitants."

It is said that the boundary stone herein mentioned is discernible when the tide is down; and the sands are certainly still fordable, at low water, from Aber to Beaumaris.

On re-assembling within doors, we found a large uncarpeted room had been prepared and lighted for dancing. The band struck up inspiring tunes;—quadrilles and country dances were commenced; they were interspersed by songs from different gentlemen in the party, one of whom possessed a fund of excellent comic talent, which will not soon be forgotten; and the amusement was continued till midnight, when the ladies seemed inclined to retire, and they did so amidst the cordial wishes of the gentlemen, that their dreams might be as pleasant as themselves. A few of the gentlemen then enjoyed the solace of a cigar; but in a short time they parted, and sought their respective apartments; the household itself sunk to repose, and

"All, all, was still." [*To be continued.*]

Tide Table.

Days.	*Morn.* h.	m.	*Even.* h	m.	*Height.* ft.	in.	*Festivals, &c.*
Tuesday	26	4	37	5	15	13	10	Aug. First Abp. Cant.
Wednesday	27	5	52	6	32	14	0	Venerable Bede.
Thursday	28	7	8	7	44	14	4	Ascension, or Holy Thurs.
Friday	29	8	16	8	47	15	3	King Charles II. restored.
Saturday	30	9	14	9	40	16	5	
Sunday	31	10	3	10	27	17	5	Sund. after Ascension Day.
Monday	1	10	50	11	11	17	11	Easter Term ends.
Tuesday	2	11	32	11	53	18	2	

The Beauties of Chess.

"*Ludimus effigiem belli.*"—VIDA.

SOLUTION TO STUDY CCXIX.

WHITE.	BLACK.
1 Pawn .....F—7×	1 King .....F—8
2 King .....F—6	2 Pawn .....B—2
3 Knight .....E—5	3 Pawn .....B—1 becomes a Queen.
4 Knight .....D—7× Mate.	

ADVERTISEMENTS.

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This EXHIBITION WILL REMAIN OPEN for THIS WEEK ONLY, with a VIEW of the INTERIOR of ROSLIN CHAPEL, and will

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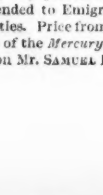
IMPROVED  MARINE

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Scientific Notices.

CELESTIAL MECHANICS.

TO THE EDITOR.

SIR,—With your good leave I would spend a few remarks on the article headed "Celestial Mechanics," in your last.

Sir R. Philips is an ingenious man, who can well see the defects of the Newtonian system, but has not yet shown himself competent to correct them. Sir Richard rejects the principles of gravitation, projection, and a vacuum, with that other bugbear, repulsion; and in all this he is right. But he talks of the force and impulse of the centre and sides of the earth, without telling us how, or whence those powers are derived. If it is said, from motion, and we ask for the cause and origin of that motion, the answer will probably be, it is the immediate operation of the Deity. But if so, must it not be by the same immediate operation that the heavenly bodies still continue to move? And then what need have we of gravitation or any thing else?

The first and most important of all philosophical inquiries is the origin of motion. Without knowing this, let men pursue what branch of science they will, they wander in the dark, and particularly so in astronomy. Every thing there depends on it. Philosophers have assumed that the natural state of matter is rest; but the probability is, that matter never was, and never could be at rest. Suppose it to be all at this moment reduced to its first principles, and these floating in the air, which it is allowed they would do. Now, since such precisely must have been the original, chaotic state of things, how they could ever be at rest, or at least long remain so, is not easy to conceive. But suppose them so, having no weight, as being at rest, and consequently without *vis inertiæ*; it were as easy for them to move, as not; and in such a medium more easy, and for obvious reasons unavoidable. And it is equally obvious, that no motion, in a resisting medium, can be direct; and if it could, nothing so moving could still have any weight. Motion, then, being inevitable, and necessarily *curvilinear, nothing more is required at once to form the heavenly bodies, and ensure their continued revolutions.* This alone, strangely overlooked as it has hitherto been, is what gave all created things weight, and tendency, as it is called, to the centre of their own motion. Every thing in the world is thus put in motion, and that motion curvilinear; and to its centre would every body necessarily fall, if not supported by the medium, and its own motion in and chiefly along with the medium, which, in fact, acquires its own weight and motion by the same means. But all bodies being thus supported, they must necessarily revolve. *Now, though this is the only centripetal force in nature, by which they do revolve, yet, observe, it is not the cause of their revolving, but actually the effect.* The cause is this:—*the exterior limb of every body so describing a curve, runs through more space, and, consequently, meets more resistance than the interior limb; and this greater pressure from without impels the body itself towards the centre, or gives it weight in that direction.* This, if you please, is as *mechanical* an operation as any in nature; and by these means the *semina rerum* were made to collect and form the heavenly bodies. And it may easily be conceived they could not well do this, already revolving as they were, without communicating to the entire mass, so formed, a corresponding motion on its own axis. And these planetary masses, being all involved in the same general medium of the system, would, with it, naturally fall into the same determination of motion from west to east, round the common centre—the sun: and to that centre alone is the tendency of all the planets as wholes. But this has nothing to do with the weight and fall of individual substances on their surfaces: it is the rotation of the latter on their own axis, and that alone, which determines the weight and fall of the former. This is so happily illustrated in a little work which I have by me, entitled 'Mulamen and Callacles,' a work which seems worthy of more notice than it has yet received, that I cannot do better than quote the author's own words. *Cal.* (for the work is in dialogue) inquires "Is a stone heavier than the earth? A part heavier than the whole?

Mul. The unsupported weight of the stone may be, and undoubtedly is, greater than that of the whole earth; for the latter has no such weight whatever. If it had, it would fall as the stone does.

Cal. Why, then, is the one supported, and the other not? Why does the stone plunge downwards, while the earth kicks the beam?

Mul. Because you do not weigh them fairly; the scales are not legal,—the one is the narrow range of the earth's rotation, in circumference not quite 25,000 miles at the equator;—the other is the whole extent of the annual orbit, in circuit nearly 600 millions of miles, making a disparity of 24,000 to 1. Now the weight, as we have seen, is inversely as the range, and also inversely as the velocity; and the orbicular velocity is almost seventy times greater than the rotatory. We may, therefore, affirm, safely enough, however paradoxical it may seem, that a part is heavier than the whole; that is, the stone in rotation with the earth is more strongly urged to the centre of that motion than the earth itself is to the centre of its motion in orbit. For, when the curvature of the motion is greater, as in a small orbit, the more relative space the exterior limb of a body so moving has to go through; and, consequently, the greater is the relative pressure on that side. Though neither the earth nor stone can fall from the annual orbit, as being sufficiently supported by the vast range and velocity, yet the stone is obliged to yield to this much stronger central pressure of rotation. But if the globe did not turn on its axis it would be as heavy as all its parts, or, rather, its parts would all be as light as it; because all would then have the same centre of motion, the sun, and the same range and the same velocity, and, consequently, all tend thither according to their quantity of matter."

The theory, therefore, cannot be correct that would "ascribe the fall and weight of bodies on the earth to the twofold motions of the entire mass." The orbicular motion would leave to them, as to the earth itself, no actual or perceptible tendency whatever but the one in orbit; and even if it could give them such other tendency, it would be annulled by the diurnal motion.

Salford, Manchester, May 8, 1829. C. E.

The Investigator.

[Comprehending Political Economy, Statistics, Jurisprudence, occasional passages from Parliamentary Speeches of a general nature, occasional Parliamentary Documents, and other speculative subjects, excluding Party Politics.]

(Continued from page 372.)

ON THE MOST EFFECTIVE EMPLOYMENT OF STEAM POWER IN GENERAL, AND MORE PARTICULARLY IN MERCANTILE NAVIGATION.

BY CAPTAIN M'KONOCHIE, R. N.

(From the Edinburgh New Philosophical Journal.)

II. 1. Wherever great speed is required, this plan does not seem advantageous; because it is impossible to conceive that, under any circumstances, a steam-boat should be able to tow another vessel, of equal or superior size to herself, as fast as she could go, were she altogether unincumbered. It is particularly to be observed, however, that great speed is in every case incompatible with minute economy, and is therefore never a first object in mercantile communication. The most effective pace of a horse is about five miles an hour, and within this accordingly (considerably within it if heavily laden) carts and waggons are chiefly limited. Merchant vessels are not in general constructed with even the regard to speed which is requisite for safety. And in steam navigation, the expense at which alone speed can be purchased is very striking indeed, it having been found that, if a power of twenty horses gives four miles an hour, it will require one of eighty horses to double this rate, of a hundred and eighty to treble it, and scarcely any power whatever will materially exceed this limit. Under no circumstances, therefore, and by no means, is it probable that a very quick transit of heavy goods can be given, consistently with the economy which, at the present moment especially, seems indispensable in mercantile transactions.

2. A very good average speed, however, four, five, or six knots an hour, for example, as may be found on trial to give the most beneficial effect, may certainly be commanded in this way; and to this the peculiar build proposed to be given to the vessels employed will in no small degree contribute. The form is not the best for extreme speed, the result of the experiments already alluded to in America giving another shape for that purpose; but that, at a moderate pace, which shall give the water impinged on time to disperse, mere form is comparatively unimportant, and weight and draught of water are almost the sole considerations, many facts lead us strongly to infer. A square plank is more easily impelled lying flat in the water, than when made to swim edge-wise. The least impulse in the world will move a skimming dish. And light merchant vessels all sail nearly alike, and all moderately well, right before the wind; and steam power is always a fair wind.

3. A good moderate pace being then certain, it is next to be observed, that it will not be much affected, upon this plan, by adverse circumstances; and that incomparably greater punctuality will be thus attained in the transmission of goods, than is at present possessed. The power here proposed to be employed is variable according to circumstances. As just remarked, it is always fair; the vessels in which it is embarked are peculiarly buoyant; the uniform distribution of the dead weight on board of them will make them easy in a sea; and the craft astern, being without masts, or long lever of any kind, by which wind can be held, and being close up under the lee of their tugs, and in their smooth wake, the task of towing them can never be excessive. At all events, the uncertainty which may thus still remain, can be as nothing compared to that under which goods are shipped in ordinary traders; and in a credit trade particularly, punctuality in the delivery of consignments on the faith of which bills are immediately drawn, must be a first consideration.

4. There would also be great safety in this mode of transit compared with what is afforded by merchant vessels of the usual construction, the smaller classes of which, indeed, are in this country, from a variety of causes, the most unsafe vessels, perhaps, in the world, for the service required from them, as witness the wholesale loss of them experienced every winter. And steam-boats, as now built, are also eminently unsafe, not the slightest provision being made in them against the inevitable consequences of any considerable leak. As here proposed, however, scarcely any accident could possibly carry them down. With two engines, and a number of boilers, their machinery could hardly ever be entirely stopped; and if it were by rare accident, both vessels could make a little sail, or anchor, according to circumstances. If the wind, during a voyage, came to blow on a neighbouring shore, a slight deviation from the direct course would soon gain an offing. If a heavy sea got up, the head could be laid, for a few hours, in any way that suited best. The light draught of both vessels would, as it were, blot out of the chart a variety of dangers, which are only formidable where much water is drawn. This, together with the complete command of manœuvre, would make even the most intricate passages easy. At the very worst, good ground tackle would hold vessels of this description for ever; or they would come to their jury masts, with their courage and resources entire, neither wreck to cut away, nor other confusion to contend with. And to crown all, more care would probably be taken in selecting masters for these valuable tugs, on whom the navigation would entirely devolve, than is notoriously taken in trading vessels, or than can be afforded by the profits yielded by the smaller classes of them. Were the whole system indeed methodized, as I think it may and will yet be, and tugs belonged to one set of proprietors, and the vessels which they towed to another, and the former were hired as required, and gradually came to ply chiefly to certain ports, and along certain coasts, this last consideration would, I think, be even paramount in recommending the plan: for the masters of these tugs would just be first rate pilots, whose individual property, character, and bread, would all be dependent on their intelligence and attention.

5. There is another advantage attending the light draught of water here contemplated for merchant vessels (and which could scarcely ever exceed four or five feet,)

which is of extreme importance. It would open up to the purposes of commerce many harbours which are now shut; and in others, be a virtual carrying out of deep water piers, where the actually doing so, under existing circumstances, is impossible. It would also extend the benefit of junction canals, which are all fully shallow, to a much greater number of vessels than now derive any benefit from them; and at the same time encourage similar works where the requisite supply of water for deep cuts cannot be procured, but where shallow trenches might thus be equally useful. And there is one point of view in which this anticipation would seem peculiarly interesting. Local improvements, whatever their extent, are necessarily of a temporary nature, and must be upheld at a constant, and in time growing expense, or be at some period again lost. But an improvement in the build of vessels generally, as here contemplated, would be a permanent acquisition,—of the more importance, that, in fact, the opening up a sea-port, where before there was none, can scarcely be too highly appreciated as a benefit to those concerned. It is a moral as well as a pecuniary gain; and stimulates the energies of the whole adjoining district, enlarging the scope of industry to its inhabitants, exercising their faculties, and opening up prospects to them which at once give them earnestness and steadiness of industrious application.

6. The expense of building and fitting out a merchantman, to be thus towed from port to port, would be greatly less than when she has to be fitted with masts and sails, and strengthened to support their weight and conflict with a heavy sea. And her capacity would be greater, because her hold would be clear fore and aft, instead of being, as now, interrupted by cabins and other accommodations, merely for the crew. She would thus at once cost less, and carry more; and even if the expense of actually moving her were to be greater, she could better pay it.

7. But the expense of moving her would be less also, at least on an average of voyages, for there would be no loss of time arising from contrary winds, and even a snail's pace would produce a quicker return. And this will be best proved by exhibiting the expenses incurred under existing circumstances, as they may be gathered from the current freights charged by sailing vessels, which, at the same time, are said to be at present unusually low. From Leith to London, the average freight I find to be 23s. per ton; to Newcastle it is 20s; to Liverpool, from 35s. to 50s., according to the admeasurement of the article embarked; to Dundee, 15s.; to Banff, 24s.; to Hamburgh, from 25s. to 30s.; to Peterhead, 18s.; to Perth, 16s.; to Aberdeen, 16s.—the whole averaging (at least on these short voyages) above 9s. per ton, or £45 per 100 tons, for every 100 miles of distance made good;—a run which, at the easy rate of four miles an hour, a steam-tug would accomplish in a day, at an expense not exceeding from £5 to £10 even now, and which will certainly be greatly less when economy shall come to be minutely studied in the production and application of steam to nautical purposes,—in other words, when steam-boats shall become really useful in trade. As yet, they may be said to have been rather the toys of the rich, than the bread-winners of the poor man; or, when this has not been the case, the locality has been some great coal district, where a saving of fuel has been no object. Velocity of movement, and splendour of decoration, have been the chief objects studied in them; and there is little doubt that this want of *useful* direction in the minds of their improvers has contributed greatly to limit their employment.

(To be continued.)

The Bouquet.

"I have here only made a nosegay of culled flowers, and have brought nothing of my own but the thread that ties them."

ANNE OF GEIERSTEIN.

BY SIR WALTER SCOTT.

[Second notice.]

The story opens with the appearance of two travellers, father and son, who, with their guide, are bewildered in the mountains by a sudden storm. To extricate themselves from a situation of such danger and difficulty, the younger attempts to scale a broken path on the side of the precipice; and the following is among our author's most vivid scenes.

"Thus estimating the extent of his danger by the measure of sound sense and reality, and supported by some degree of practice in such exercise, the brave youth went forward on his awful journey, step by step, winning his way with a caution, and fortitude, and presence of mind, which alone could have saved him from instant destruction. At length he gained a point where a projecting rock formed the angle of the precipice, so far as it had been visible to him from the platform. This, therefore, was the critical point of his undertaking; but it was also the most perilous part of it. The rock projected more than six feet forward over the torrent, which he heard raging at the depth of a hundred yards beneath, with a noise like subterranean thunder. He examined the spot with the utmost care, and was led by the existence of shrubs, grass, and even stunted trees, to believe that this rock marked the farthest extent of the slip or slide of earth, and that, could he but round the angle of which it was the termination, he might hope to attain the continuation of the path which had been so strangely interrupted by this convulsion of nature. But the crag jutted out so much as to afford no possibility of passing either under or around it; and as it arose several feet above the position which Arthur had attained, it was no easy matter to climb over it. This was, however, the course which he chose, as the only mode of surmounting what he hoped might prove the last obstacle to his voyage of discovery. A projecting tree afforded him the means of raising and swinging himself up to the top of the crag. But he had scarcely planted himself on it, had scarcely a moment to congratulate himself, on seeing, amid a wild chaos of cliffs and woods, the gloomy ruins of Geierstein, with smoke arising, and indicating something like a human habitation beside them, when, to his extreme terror, he felt the huge cliff on which he stood tremble, stoop slowly forward, and gradually sink from its position. Projecting as it was, and shaken as its equilibrium had been by the recent earthquake, it lay now so insecurely poised, that its balance was entirely destroyed, even by the addition of the young man's weight. Aroused by the imminence of the danger, Arthur, by an instinctive attempt at self-preservation, drew cautiously back from the falling crag into the tree by which he had ascended, and turned his head back as if spell-bound, to watch the descent of the fatal rock from which he had just retreated. It tottered for two or three seconds, as if uncertain which way to fall; and had it taken a sidelong direction, must have dashed the adventurer from his place of refuge, or borne both the tree and him headlong down into the river. After a moment of horrible uncertainty, the power of gravitation determined a direct and forward descent. Down went the huge fragment, which must have weighed at least twenty tons, rending and splintering in its precipitate course, the trees and bushes which it encountered, and settling at length in the channel of the torrent, with a din equal to the discharge of a hundred pieces of artillery. The sound was re-echoed from bank to bank, from precipice to precipice, with emulative thunders; nor was the tumult silent till it rose into the region of eternal snows, which equally insensible to terrestrial sounds, and unfavourable to animal life, heard the roar in their majestic solitude, but suffered it to die away without a responsive voice.

"The solid rock had trembled and rent beneath his footsteps; and although, by an effort rather mechanical than voluntary, he had withdrawn himself from the instant ruin attending its descent, he felt as if the better part of him, his firmness of mind and strength of body, had been rent away with the descending rock, as it fell thundering, with clouds of dust and smoke, into the torrents and whirlpools of the vexed gulf beneath. In fact, the seaman swept from the deck of a wrecked vessel, drenched in the waves, and battered against the rocks on the shore, does not differ more from the same mariner, when, at the commencement of the gale, he stood upon the deck of his favourite ship, proud of her strength and his own dexterity, than Arthur, when commencing his journey, from the same Arthur, while clinging to the decayed trunk of an old tree, from which, suspended between heaven and earth, he saw the fall of the crag which he had so nearly accompanied.—The effects of his terror, indeed, were physical as well as moral, for a thousand colours played before his eyes; he was attacked by a sick dizziness, and deprived at once of the obedience of those limbs which had hitherto served him so admirably; his arms and hands, as if no longer at his own command, now clung to the branches of the tree, with a cramp-like tenacity, over which he seemed to possess no power, and now trembled in a state of such complete nervous relaxation, as led him to fear that they were becoming unable to support him longer in his position.—An incident, in itself trifling, added to the distress occasioned by this alienation of his powers. All living things in the neighbourhood had, as might be supposed, been startled by the tremendous fall to which his progress had given occasion. Flights of owls, bats, and other birds of darkness, compelled to betake themselves to the air, had lost no time in returning into their bowers of ivy, or the harbour afforded them by the rifts and holes of the neighbouring rocks. One of this ill-omened flight chanced to be a *lammergeier*, or Alpine vulture, a bird larger and more voracious than the eagle himself, and which Arthur had not been accustomed to see, or at least to look upon closely. With the instinct of most birds of prey, it is the custom of this creature, when gorged with food, to assume some station of inaccessible security, and there remain stationary and motionless for days together, till the work of digestion has been accomplished, and activity returns with the pressure of appetite. Disturbed from such a state of repose, one of these terrific birds had risen from the ravine to which the species gives its name, and having circled unwillingly round, with a ghastly scream and a flagging wing, it had sunk down upon the pinnacle of a crag, not four yards from the tree in which Arthur held his precarious station. Although still in some degree stupified with torpor, it seemed encouraged by the motionless state of the young man to suppose him dead, or dying, and sat there and gazed at him, without displaying any of that apprehension which the fiercest animals usually entertain from the vicinity of man. As Arthur, endeavouring to shake off the incapacitating effects of his panic fear, raised his eyes to look gradually and cautiously around, he encountered those of the voracious and obscene bird, whose head and neck denuded of feathers, her eyes surrounded by an iris of an orange tawny colour, and a position more horizontal than erect, distinguished her as much from the noble carriage and graceful proportion of the eagle, as those of the lion place him in the ranks of creation above the gaunt, ravenous, grisly, yet dastard wolf. As if arrested by a charm, the eyes of young Philipson remained bent on this ill-omened and ill-favoured bird, without his having the power to remove them. The apprehension of dangers, ideal as well real, weighed upon his weakened mind, disabled as it was by the circumstances of his situation. The near approach of a creature not more loathsome to the human race, than averse to come within their reach, seemed as ominous as it was unusual. Why did it gaze on him with such glaring earnestness, projecting its disgusting form, as if presently to alight upon his person? The foul bird, was she the demon of the place to which her name referred? and did she come to exult, that an intruder on her haunts seemed involved amid their perils, with little hope or chance of deliverance? Or was it a native vulture of the rocks, whose sagacity foresaw that the rash traveller was soon destined to be its victim? Could the creature, whose senses are said to be so acute, argue from circumstances the stranger's approaching death, and wait, like a raven or hooded crow by a dying sheep, for the earliest opportunity to commence her ravenous banquet? Was he doomed to feel its beak and talons before his heart's blood should cease to beat? Had he already lost the dignity of humanity, the awe which the being formed in the image of his Maker inspires into all inferior creatures? Apprehensions so painful served more than all that reason could suggest, to renew, in some degree, the elasticity of the young man's mind. By waving his handkerchief, using, however, the greatest precaution in his movements, he

succeeded in scaring the vulture from his vicinity. It rose from its resting-place, screaming harshly and dolefully, and sailing on its expanded pinions to seek a place of more undisturbed repose, while the adventurous traveller felt a sensible pleasure at being relieved of its disgusting presence.

"But, as he looked around him, he became more and more sensible how much he was enervated by the bodily injuries and the mental agony which he had sustained during his late peril. He could not, by any effort of which he was capable, fix his giddy and bewildered eyes on the scene around him;—they seemed to reel till the landscape danced along with them, and a motly chaos of thickets and tall cliffs, which interposed between him and the ruinous Castle of Geierstein, mixed and whirled round in such confusion, that nothing, save the consciousness that such an idea was the suggestion of partial insanity, prevented him from throwing himself from the tree, as if to join the wild dance to which his disturbed brain had given motion. 'Heaven be my protection!' said the unfortunate young man, closing his eyes,—in hopes, by abstracting himself from the terrors of his situation, to compose his too active imagination, 'my senses are abandoning me!' He became still more convinced that this was the case, when a female voice, in a high-pitched but eminently musical accent, was heard at no great distance, as if calling to him. He opened his eyes once more, raised his head, and looked towards the place from whence the sounds seemed to come, though far from being certain that they existed saving in his own disordered imagination. The vision which appeared had almost confirmed him in the opinion that his mind was unsettled, and his senses in no state to serve him accurately. Upon the very summit of a pyramidal rock that rose out of the depth of the valley, was seen a female figure, so obscured by mist, that only the outline could be traced. The form, reflected against the sky, appeared rather the undefined lineaments of a spirit than of a mortal maiden; for her person seemed as light, and scarcely more opaque, than the thin cloud that surrounded her pedestal. Arthur's first belief was, that the Virgin had heard his vows, and had descended in person to his rescue; and he was about to recite his Ave Maria, when the voice again called to him with the singular shrill modulation of the mountain haloo, by which the natives of the Alps can hold conference with each other from one mountain ridge to another, across ravines of great depth and width. While he debated how to address this unexpected apparition, it disappeared from the point which it at first occupied, and presently after became again visible, perched on the cliff out of which projected the tree in which Arthur had taken refuge. Her personal appearance, as well as her dress, made it then apparent that she was a maiden of these mountains, familiar with their dangerous paths. He saw that a beautiful young woman stood before him, who regarded him with a mixture of pity and wonder. 'Stranger,' she at length said, 'who are you, and whence come you?' 'I am a stranger, maiden, as you justly term me,' answered the young man, raising himself as well as he could. 'I left Lucerne this morning, with my father and a guide. I parted with them not three furlongs from thence. May it please you, gentle maiden, to warn them of my safety, for I know my father will be in despair upon my account?' 'Willingly, said the maiden; 'but I think my uncle, or some one of my kinsmen, must have already found them, and will prove faithful guides. Can I not aid you?—are you wounded—are you hurt? We were alarmed by the fall of a rock—ay, and yonder it lies, a mass of no ordinary size.' As the Swiss maiden spoke thus, she approached so close to the verge of the precipice, and looked with such indifference into the gulf, that the sympathy which connects the actor and spectator upon such occasions brought back the sickness and vertigo from which Arthur had just recovered, and he sunk back into his former more recumbent posture, with something like a faint groan. 'You are then ill?' said the maiden, who observed him turn pale; where and what is the herm you have received?' 'None, gentle maiden, saving some bruises of little import; but my head turns, and my heart grows sick, when I see you so near the verge of the cliff.' 'Is that all?' replied the Swiss maiden. 'Know, stranger, that I do not stand on my uncle's hearth with more security than I have stood upon precipices, compared to which this is a child's leap. You, too, stranger, if, as I judge from the traces, you have come along the edge of the precipice which the earth-slide hath laid bare, ought to be far beyond such weakness, since surely you must be well entitled to call yourself a cragsman.' 'I might have called myself so half an hour since,' answered Arthur; 'but I think I shall hardly venture to assume the name in future.' 'Be not downcast,' said his kind adviser, 'for a passing qualm, which will at times cloud the spirit and dazzle the eyesight of the bravest and most experienced. Raise yourself upon the trunk of the tree, and advance closer to the rock out of which it grows. Observe the place well. It is easy for you, when you have attained the lower part of the projecting stem, to gain, by one bold step, the solid rock upon which I stand, after which there is no danger or difficulty worthy of mention to a young man whose limbs are whole, and whose courage is active.' 'My limbs are indeed sound,' replied the youth; 'but I am ashamed to think how much my courage is broken. Yet I will not disgrace the interest you have taken in an unhappy wanderer, by listening longer to the dastardly suggestions of a feeling which till to-day has been a stranger to my bosom.' The maiden looked on him anxiously, and with much interest, as, raising himself cautiously, and moving along the trunk of the tree, which lay nearly horizontal from the rock, and seemed to bend as he changed his posture, the youth at length stood upright, within what, on level ground, had been but an extended stride to the cliff on which the Swiss maiden stood. But instead of being a step to be taken on the level and firm ground, it was one which must cross a dark abyss, at the bottom of which a torrent surged and boiled with incredible fury. Arthur's knees knocked against each other, his feet became of lead, and seemed no longer at his command; and he experienced, in a stronger degree than ever, that unnerving influence which those who have been overwhelmed by it in a situation of like peril never can forget, and which others, happily strangers to its power, may have difficulty even in comprehending. The young woman discerned his emotion, and foresaw its probable consequences. As the only mode in her power to restore his confidence, she alighted with the ease and security of a bird, and in the same instant returned to the cliff, and extending her hand to the stranger, 'My arm,' she said, 'is but a slight balustrade; yet do but step forward with resolution, and you will find it as secure as the battlement of Berne.' But shame now overcame terror so much, that Arthur, declining assistance which he could not have accepted without feeling lowered in his own eyes, took heart of grace, and successfully achieved the formidable step which placed him upon the same cliff with his kind assistant."

A Marine Pun.—A few evenings since a party of gentlemen being very comfortably assembled in the snug cabin of the Floating Bath, one of them was requested to sing; to which he immediately assented, observing that as they were on the water, a sea song would perhaps be more appropriate than any other. As he was preparing to pitch his voice to the proper key, a musical gentleman present taking a tuning-fork from his pocket, made it audibly vibrate on the table as a guide to him. The gentleman about to sing inquired what note that was; to which his musical friend, with admirable promptitude, as Mathews says, replied, "Why, Sir, it is the very note you want; you are going to sing a *sea song*, and this is a C fork."

Mr. Knowles.—This gentleman, whose name ranks high in the literary world, and who possesses a correct and most refined taste, is about, we understand, to deliver a course of six lectures on the Drama, at the Music-hall, Bold-street. No gentleman is more fit for the task, and we hope the public will take advantage of the opportunity about to be offered to them.

Correspondence.

MATHEMATICAL QUERY.

TO THE EDITOR.

SIR,—Permit me to present you with the following solution to the question of *D.* in your last *Kaleidoscope.*

May 12, 1829. Yours, &c. J. W——N.

Put x = the time required, then $\frac{x}{6}+\frac{x}{8}$ and $\frac{x}{10}$ will be the quantities run in by *A B* and *C* respectively, in the time required. And $\frac{x}{9}+\frac{x}{11}$ and $\frac{x}{13}$ will be the quantities run out by *D E* and *F*, respectively, in the time required.

Now $\left(\frac{x}{6}+\frac{x}{8}+\frac{x}{10}\right)-\left(\frac{x}{9}+\frac{x}{11}+\frac{x}{13}\right)=1$. By reduction, $69636\,x=617760$, whence $x=\frac{617760}{69636}=8h.\ 52\frac{691}{2487}m.$ Answer.

TO THE EDITOR.

SIR,—From the remarks of your correspondent *W. C.* in the last *Kaleidoscope*, it would appear that I misunderstood his question. This was certainly the case, if it were given me as it appeared in your paper, for I received it *viva voce.*

W. C. states that his solution of the question is a general one. Now, this is what I cannot admit; for, suppose 75 were the number given, instead of 95, the other conditions remaining unchanged, would his solution hold good in this case? I think not; therefore how can it be universally true.—Yours, &c. D.

TO THE EDITOR.

SIR,—A party of four, who had each been fortunate enough to win at the races, last week, were asked on their return, by a member of a company they had joined, how much they had won. Not being willing to give a direct answer, the following reply (after some consultation among themselves) was made. The continual product of the winnings of the three first was 16 guineas, that of the three last 56 guineas; of the two first and last £19 12s., and of the two last and first 32 guineas.—Required the winnings of each?

N. B. Algebra is not necessary to the solution of this question.—Yours, &c. NO SPORTSMAN.

To Correspondents.

ERRATUM.—In the stanzas of "Love and Death," which appeared in our last number, the word "*worn*" in the fourth line of the last stanza, was inadvertently substituted for the word "*warm.*"

GAME OF DRAUGHTS.—Might not the question as to the right of *omitting* to take, and choosing to be huffed, be settled by another question? On what principle have all authors of critical situations and terminations of the game stated their moves? Clearly on the *compulsion* to take.

IRISH SCENERY.—In consequence of the introduction of the selection from Sir Walter Scott's new work, No. 15 of Irish Scenery is reserved for our next.

THE FACIAL ANGLE.—In consequence of a hint from a correspondent, we shall introduce an article on this subject in our next.

P. R. will find in our present number, one of the articles contained in his communication.—The Epigram is exceptionable for obvious reasons.—The Dialogue between Echo and a Glutton has often been published, but it will bear repetition, and shall have a place in our next.

The lines of *Zero* have been received.

SIR WALTER SCOTT.—We thank a *Friend and Constant Reader* for his attention. We already had our eye on the interesting outline of the history of this extraordinary man, which is to be found in his general preface to the new edition of the Waverley novels. It is preparing for the next *Kaleidoscope.*

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